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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/684,461	**Applicant(s)** IKENAKA, KIYONO	
	Examiner CHRISTOPHER R. LAMB	**Art Unit** 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-5,7-9,11-23,27,29-31 and 33-83* is/are pending in the application.

4a) Of the above claim(s) *See Continuation Sheet* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,11,14,23,25,33,36,60-62,65-67,70 and 71* is/are rejected.

7)☒ Claim(s) *4,5,17,26,27 and 54* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims withdrawn from consideration are 7-9,12,13,15,16,18-22,29-31,34,35,37-53,55-59,63,64,68,69 and 72-83.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3, 11, 14, 23, 25, 33, 36, 60, 61, and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiono et al. (US 6,834,036) in view of Ohtaki et al. (US 6,449,095), and further in view of Ota et al. (US 2002/0003767)

Regarding claim 1:

Shiono discloses (the sixth embodiment, Fig. 8, is relied upon, but some elements are described in earlier embodiments):

An optical element for use in an optical pickup apparatus which comprises

a first light source having a wavelength λ1 (column 11, lines 40-50),

a "third" light source having a wavelength λ3 ($1.6 \cdot \lambda 1 \leq \lambda 3 \leq 2.0 \cdot \lambda 1$ and $\lambda 2 < \lambda 3$) (column 11, lines 40-50: this is Shino's second light source, but since its wavelength matches the third light source of the claim, it will be referred to as a "third light source"), and

a light converging system including an optical element (Fig. 8),

wherein the light converging system converges a light flux from the first light source onto an information recording plane of a first optical information recording medium through a protective layer having a thickness t1 ($0.5 \leq t1(mm) \leq 0.7mm$) so that recording and/or reproducing information is conducted for the first optical information recording medium (this corresponds to the high-density disk of column 12, lines 1-20: the thickness is not disclosed in Shiono but from the capacity and the numerical aperture it corresponds to a HD-DVD, which has a protective layer with a thickness of 0.6 mm),

converges a light flux from the third light source onto an information recording plane of a third optical information recording medium through a protective layer having a thickness t3 ($1.1 \leq t3$ (mm) ≤ 1.3) so that recording and/or reproducing information is conducted for the third optical information recording medium (this corresponds to the CD disk of column 12, lines 1-20),

the optical element comprising:

a first diffractive structure on at least one surface thereof (Fig. 8: 19a),

wherein when recording and/or reproducing is conducted for the first and third information recording mediums respectively, a light flux emitted from each of the first, second and third light sources passes in common through the first diffractive structure and thereafter is converged respectively to form a light spot on an information recording plane of the first and third optical information recording mediums (Fig. 8; column 12, lines 1-20),

wherein in a case that a light flux having a wavelength $\lambda 1$ or $\lambda 3$ comes into the optical element, when an order number of a diffracted ray having the maximum diffraction efficiency among diffracted rays generated by the first diffractive structure is n1 in the light flux having the wavelength λ1 and n3 in the light flux having the wavelength λ3, the following formula is satisfied: n1=2, n3=1 (column 12, lines 25-55).

Shiono does not disclose (in this embodiment):

(A) a second light source having a wavelength λ2 (λ1<λ2);

wherein the light converging system converges a light flux from the second light source onto an information recording plane of a second optical information recording medium through a protective layer having a thickness t2 (0.5 ≤ t2 (mm) ≤ 0.7) so that recording and/or reproducing information is conducted for the second optical information recording medium;

wherein in a case that a light flux having the wavelength λ2 comes into the optical element, when an order number of a diffracted ray having the maximum diffraction efficiency among diffracted rays generated by the first diffractive structure is n2 in the light flux having the wavelength λ2, the following formula is satisfied: n2=1.

(B) wherein, when a wavelength changes to become longer, the first diffractive structure has an optical characteristic to make the spherical aberration of a light flux having passed through the diffractive structure to be under.

Regarding (A):

Ohtaki discloses:

a second light source having a wavelength λ2 (λ1<λ2) (column 1, lines 5-30: the wavelength for DVDs is longer than the wavelength for HD-DVDs);

wherein the light converging system converges a light flux from the second light source onto an information recording plane of a second optical information recording medium through a protective layer having a thickness t2 ($0.5 \leq t2 \text{ (mm)} \leq 0.7$) so that recording and/or reproducing information is conducted for the second optical information recording medium (column 1, lines 5-30: the thickness of a DVD's protective layer is 0.6 mm);

wherein in a case that a light flux having the wavelength $\lambda 2$ comes into the optical element, when an order number of a diffracted ray having the maximum diffraction efficiency among diffracted rays generated by the first diffractive structure is n2 in the light flux having the wavelength $\lambda 2$, the following formula is satisfied: $n2=1$ (column 7, lines 35-60).

It would have been obvious to one of ordinary skill in the art to include in Shiono a second light source having a wavelength $\lambda 2$, to use that light source to read information from recording media with a protective layer of thickness t2, and to use the first order diffracted light with that wavelength, as taught by Ohtaki.

The motivation would have been to have an apparatus compatible with all three of HD-DVDs, DVDs, and CDs.

Regarding (B):

Ota discloses wherein, when a wavelength changes to become longer, the first diffractive structure has an optical characteristic to make the spherical aberration of a light flux having passed through the diffractive structure to be under (paragraph 191).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Shiono in view of Ohtaki wherein, when a wavelength changes to become longer, the first diffractive structure has an optical characteristic to make the spherical aberration of a light flux having passed through the diffractive structure to be under, as taught by Ota.

The rationale is as follows:

Ota is directed to the same field of art: i.e., an optical pickup apparatus. Ota discloses a known method to improve a diffractive structure on the optical lens. Ota discloses that this can control aberration. One of ordinary skill could have combined the improvement taught by Ota with the element of Shiono in view of Ohtaki and achieved predictable results.

Regarding claim 3:

Shiono in view of Ohtaki, and further in view of Ota, discloses wherein when the optical system magnification of the optical element for the wavelength $\lambda 1$ is m1, the following formula is satisfied: $m1 = 0$ (all this means is that the beam enters the optical element as parallel rays: this is apparent in Shiono Fig. 7).

Regarding claim 11:

Shiono in view of Ohtaki, and further in view of Ota, discloses wherein when the optical system magnification of the optical element for the wavelength $\lambda 2$ is m2, the following formula is satisfied: $m2=0$ (this is similar to claim 3: in Shiono the beam enters the optical element as a parallel ray; likewise in Ohtaki Fig. 5 it is clear the beam enters the optical element as a parallel ray).

Regarding claim 14:

In Shiono in view of Ohtaki, and further in view of Ota, the optical element is an objective lens (Shiono Fig. 8).

Regarding claims 23, 25, 33, and 36:

All elements positively recited in the claims have already been identified with regards to earlier claims. No further elaboration is necessary.

Regarding claim 60:

In Shiono in view of Ohtaki, and further in view of Ota, the third light source is a hololaser (the photodetectors and laser are integrated as per Fig. 7).

Regarding claim 61:

In Shiono in view of Ohtaki, and further in view of Ota, a first chromatic correcting element to achromatize a light flux having a wavelength $\lambda 1$ is located on an optical path of the light flux having the wavelength $\lambda 1$ (Shiono Fig. 7: the first chromatic correcting element is the diffraction grating).

Regarding claim 65:

In Shiono in view of Ohtaki, and further in view of Ota, a collimator is located on an optical path on which the light flux having the wavelength $\lambda 1$ and the light flux having the wavelength $\lambda 2$ pass in common (Shiono Fig. 7).

3. Claims 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiono in view of Ohtaki, and further in view of Ota.

Regarding claim 62:

Shiono in view of Ohtaki, and further in view of Ota, discloses an optical pickup apparatus as discussed above.

Shiono in view of Ohtaki, and further in view of Ota, doesn't disclose (in the embodiment relied upon) wherein a second chromatic correcting element to achromatize a light flux having a wavelength λ2 is located on an optical path of the light flux having the wavelength λ2.

Shiono discloses that to increase the light utilization efficiency, a separate diffractive optical element can be positioned only in the optical path of the beam of each wavelength (column 1, lines 50-67).

It would have been obvious to one of ordinary skill in the art to include in Shiono in view of Ohtaki, and further in view of Ota, wherein there is a separate diffractive optical element (that is, a chromatic correcting element) in the path of the beam of each wavelength: thus a second chromatic correcting element to achromatize a light flux having a wavelength λ2 is located on an optical path of the light flux having the wavelength λ2.

The motivation would have been to increase the light utilization efficiency.

4. Claims 66, 67 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiono in view of Ohtaki, and further in view of Ota, as applied to claim 65 above, and further in view of Ando (US 6,252,686).

Regarding claim 66:

Shiono in view of Ohtaki, and further in view of Ota, disclose an optical pickup apparatus as discussed above.

Shiono in view of Ohtaki, and further in view of Ota, does not disclose:

"wherein a first beam shaper to shape a light flux having the wavelength λ1 is located at a light source side than the collimator on an optical path on which the light flux having the wavelength λ1 passes."

Ando discloses:

wherein a first beam shaper to shape a light flux having the wavelength λ1 is located at a light source side than the collimator on an optical path on which the light flux having the wavelength λ1 passes (Fig. 1; column 4, lines 45-50).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Shiono in view of Ohtaki, and further in view of Ota, wherein wherein a first beam shaper to shape a light flux having the wavelength λ1 is located at a light source side than the collimator on an optical path on which the light flux having the wavelength λ1 passes.

The motivation would have been to improve the shape of the focused beam (Ando column 1, lines 50-67 discloses the problems that occur without beam shaping).

Regarding claim 67:

Shiono in view of Ohtaki, and further in view of Ota,, and further in view of Ando:

the first beam shaper corrects chromatic aberration for a light beam having the wavelength λ1 (Ando column 10, line 60 to column 11, line 5: the beam shaper can be designed to decrease the wavelength, or chromatic, aberration).

Regarding claim 70:

This claim is similar to claim 66 and is similarly rejected (in Shiono in view of Ohtaki, and further in view of Ota, the two beams already share a common light path).

5. Claim 71 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiono in view of Ohtaki, and further in view of Ota, as applied to claim 65 above, and further in view of Applicant's admitted prior art.

Shiono does not specifically disclose “wherein the collimator is made of a plastic material.” Shiono does not disclose what the collimator is made from.

In a previous Office Action the Examiner took Official Notice that lenses made from plastic materials are well known in the art. Applicant did not properly traverse the taking of Official Notice and therefore this fact is taken as admitted prior art.

It would have been obvious to one of ordinary skill in the art to include in Shiono wherein the collimator is made of a plastic material.

The motivation would have been to, for example, use a lighter material than glass.

Allowable Subject Matter

6. Claims 4, 5, 17, 26, 27, and 54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. A statement of reasons for the indication of allowable subject matter was given in the previous Office Action. Although the rejections above are slightly different (i.e., they include the teaching of Ota), the reasons for allowability have not changed.

Response to Arguments

8. Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

Specifically, applicant discussed at great length the difference between Shiono's disclosure and the subject matter wherein, when a wavelength changes to become longer, the first diffractive structure has an optical characteristic to make the spherical aberration of a light flux having passed through the diffractive structure to be under.

Their essential argument was that Shiono discloses that the entire focal length is shortened, but in the claim language the focal length for the marginal rays is shortened while the focal length for the paraxial rays remains the same.

It's true that Shiono doesn't specifically discuss the marginal vs. paraxial rays. This behavior may be inherent to Shiono, but it is not worth arguing this point.

Instead, in order to resolve this argument, the rejection above now includes Ota, which specifically teaches this subject matter. Therefore applicant's arguments are now moot.

Finally, applicant also discussed the taking of Official Notice. It's not clear if applicant meant to traverse the taking of Official Notice or just took issue with the Examiner's assertion that because applicant didn't traverse it, the fact in question is taken to be admitted prior art. If applicant did mean to traverse the taking of Official Notice, the traversal was not adequate, because the applicant "must specifically point out the supposed errors...which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art." Since the fact in question is merely that a lens could be made from plastic, applicant may have trouble making such a statement. If applicant is instead arguing with the taking of this fact to be admitted prior art, the lack of an adequate traversal means that it is proper for the Examiner to take the fact as admitted prior art. See MPEP 2144.03.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER R. LAMB whose telephone number is (571)272-5264. The examiner can normally be reached on 9:00 AM to 5:30 PM Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher R Lamb/
Examiner, Art Unit 2627